

Remarks

This is in response to the final Office Action dated June 16, 2010. In view of the following remarks, reconsideration of the rejections and further examination are requested.

Rejections under 35 U.S.C §103(a):

Claims 1, 7-9, 12-13, and 16-21 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Maeshima (US Pub. 2002/0032025) in view of Moriguchi (US 6,680,903). This rejection is respectfully traversed for the following reasons.

Claim 1 recites:

an issuance portion configured to periodically issue a substitute frame, created by using the control information contained in the control frame most recently detected and including the same information as the control information, and further configured to cause the terminal to operate as a substitute control station, which guarantees access of the plurality of terminals to the communication medium, when the control frame is not newly detected before a predetermined first time period elapses after the control frame has been most recently detected by the detection portion, and

a control station mode portion configured to cause the terminal which has been operating as the substitute control station to operate as the control station, unless the detection portion newly detects a control frame issued by the control station before a predetermined second time period elapses after the substitute frame has been started to be issued,

wherein the issuance portion stops issuing the substitute frame when the detection portion newly detects the control frame before the predetermined second time period elapses after the substitute frame has been started to be issued.

According to the above features as recited in claim 1, the terminal (i) issues the substitute frame during the second time period, if the control station is disconnected (i.e., the terminal becomes a *substitute* control station), (ii) becomes a new control station, if the control station does not recover within the second time period, and (iii) stops issuing the substitute frame, if the control station recovers within the second time period. Issuing a substitute frame as a substitute control station is different from the terminal actually becoming the control station. The substitute control station maintains the state of the network so that it is the same as it was when the control

station most recently controlled the network. It does this by issuing a substitute frame, which is a *copy* of the control frame most recently issued by the control station. At this point, the terminal acting as the substitute control station is still operating as a controlled terminal. In contrast to a substitute control station, a control station controls the communication network dynamically by allocating a transmission resource and issuing the control frame in response to the request from other terminals.

Thus, the terminal recited in claim 1 issues the substitute frame during the period after detecting that the control station is disconnected and before becoming a new control station. This way media access is guaranteed (i.e., the state of the network at the most recent time the control station controlled the network is maintained) even during the period which the control station is absent. The combination of Maeshima and Moriguchi fails to disclose or suggest the above features as recited in claim 1.

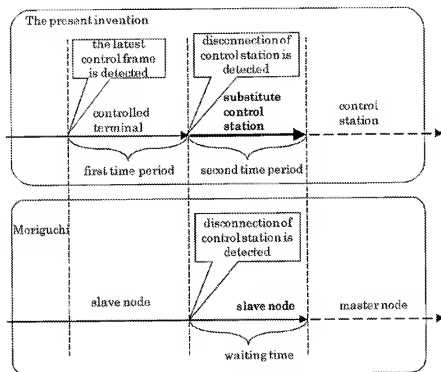
As discussed in detail in the amendment filed on March 8, 2010, Maeshima discloses a terminal that becomes a new control station, when the control station is disconnected. However, Maeshima does not disclose or suggest issuing a substitute frame, during the second period, when the control station is disconnected, thus guaranteeing media access. Moriguchi also fails to disclose or suggest the above features as recited in claim 1.

Moriguchi discloses an alternative master node that replaces a master node, when the master node becomes disconnected. According to Moriguchi, when a slave node 110 detects a failure in the loop including the master node, it waits during a “waiting time” according to the corresponding node ID (see col. 16, line 64 - col. 17, line 1). After the node has waited the appropriate “waiting time,” it begins operating as the alternative master node, and starts outputting the specific signal pattern (see col. 17, lines 1-3). When the other nodes receive the specific signal pattern, the nodes acknowledge that the master node (i.e., the alternative master node) has returned to the network (see col. 17, lines 3-5). This process is shown in Figure 8 of Moriguchi.

As shown in Figure 8, point 81 is the time when the signal is supposed to be output from the master node, and Tmk 82 represents the delay time, or time necessary for the signal to reach the slave node (see col. 17, lines 37-41). Tn 89 represents, for example, the time necessary for processing the signal in the slave node (see col. 17, lines 49-53). Thus, according to Figure 8, after the slave node waits the “waiting time” 83, calculated based on its node ID, the slave node

can begin to act as an alternative master node and output the specific signal pattern (see col. 17, lines 41-47). Here, the “alternative master node” refers to the slave node which is the candidate for a new master node and which acts as the new master node when the master node is disconnected.

The operation of Moriguchi is contrasted with the operation of the present invention as recited in claim 1 in the figure below.



As shown in the above figure, the node of Moriguchi changes from a slave node to a new master node (i.e., alternative master node), when the master node does not return during the waiting time. This makes it possible to avoid unnecessarily switching to the master node, when the master node quickly recovers. However, since the master node is absent during the “waiting time,” no control frames are issued and media access cannot be guaranteed.

Thus, the “alternative master node” of Moriguchi corresponds to the “control station” as recited in claim 1 of the present application, and not the “substitute control station.” This is because both the master node and the alternative master node described in Moriguchi send “a specific signal pattern” in the same way (column 9, lines 63 to 64 and column 17, lines 1 to 3 of Moriguchi). In contrast, the substitute control station recited in claim 1 of the present application

is not a control station, because the substitute control station merely issues a *copy* of the actual control frame, as discussed above. Therefore, Maeshima does not disclose or suggest issuing a substitute frame, during the second period, when the control station is disconnected, thus guaranteeing media access.

Accordingly, no obvious combination of Maeshima and Moriguchi would result in, or otherwise render obvious under 35 U.S.C. §103(a), the features recited in claim 1. Therefore, claim 1 is patentable over the combination of Maeshima and Moriguchi.

Claim 19 is patentable over the combination of Maeshima and Moriguchi for at least the reasons above with regard to independent claim 1.

Claims 18 and 20 recite (i) periodically issuing a substitute frame, created by using the control information contained in the control frame most recently detected and including the same information as the control information, (ii) causing the terminal to operate as a substitute control station, which guarantees access of the plurality of terminals to the communication medium, when the control frame is not newly detected before a predetermined first time period elapses after the control frame has been most recently detected by the detection portion; and (iii) causing the terminal which has been operating as the substitute control station to operate as the control station, unless the control frame issued by the control station is newly detected before a predetermined second time period elapses after the substitute frame has been started to be issued, (iv) wherein the periodic issuing of the substitute frame stops when the control frame is newly detected before the predetermined second time period elapses after the substitute frame has been started to be issued. Therefore, for at least reasons similar to those discussed above with regard to claim 1, claims 18 and 20 are also patentable over the combination of Maeshima and Moriguchi.

Claims 7-9, 12-13, 16-17, and 21 are either directly or indirectly dependent on independent claim 1. As a result, claims 1, 7-9, 12-13, and 16-21 are allowable over the combination of Maeshima and Moriguchi.

Claim 3 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Maeshima (US Pub. 2002/0032025) in view of Moriguchi (US 6,680,903) and further in view of Kita (US Pub. 2003/0054821). This rejection is respectfully traversed for the following reasons.

Claim 3 is dependent on independent claim 1 discussed above in detail.

It is apparent that Kita fails to disclose or suggest the features lacking from the combination of Maeshima and Moriguchi discussed above with regard to independent claim 1. Accordingly, no obvious combination of Maeshima, Moriguchi, and Kita would result in, or otherwise render obvious under 35 U.S.C. §103(a), the features recited in claims 1 and 3. Therefore, claims 1 and 3 are patentable over the combination of Maeshima, Moriguchi, and Kita.

Claim 4 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Maeshima (US Pub. 2002/0032025) in view of Moriguchi (US 6,680,903) and further in view of Spartz (US 2004/0002338). This rejection is respectfully traversed for the following reasons.

Claim 4 is dependent on independent claim 1 discussed above in detail.

It is apparent that Spartz fails to disclose or suggest the features lacking from the combination of Maeshima and Moriguchi discussed above with regard to independent claim 1. Accordingly, no obvious combination of Maeshima, Moriguchi, and Spartz would result in, or otherwise render obvious under 35 U.S.C. §103(a), the features recited in claims 1 and 4. Therefore, claims 1 and 4 are patentable over the combination of Maeshima, Moriguchi, and Spartz.

Claims 10-11 and 14-15 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Maeshima (US Pub. 2002/0032025) in view of Moriguchi (US 6,680,903) and further in view of Isumi (US 5,815,816). This rejection is respectfully traversed for the following reasons.

Claims 10-11 and 14-15 are ultimately dependent on independent claim 1 discussed above in detail.

It is apparent that Isumi fails to disclose or suggest the features lacking from the combination of Maeshima and Moriguchi discussed above with regard to independent claim 1. Accordingly, no obvious combination of Maeshima, Moriguchi, and Isumi would result in, or otherwise render obvious under 35 U.S.C. §103(a), the features recited in claims 1, 10-11, and 14-15. Therefore, claims 1, 10-11, and 14-15 are patentable over the combination of Maeshima, Moriguchi, and Isumi.

Because of the above-mentioned distinctions, it is believed clear that claims 1, 3, 4 and 7-21 are allowable over the references relied upon in the rejections. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time of the

invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 1, 3, 4 and 7-21. Therefore, it is submitted that claims 1, 3, 4 and 7-21 are clearly allowable over the prior art of record.

In view of the above remarks, it is submitted that the present application is now in condition for allowance. The examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

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